CITY OF ROCKS NATIONAL RESERVE

BORROW PIT RESTORATION PROJECT

ENVIRONMENTAL ASSESSMENT

January 2004

Introduction

City of Rocks National Reserve, a 14,107-acre unique geologic area, is located in the Albion Mountains of Cassia County, Idaho. The nearest community is Almo, an unincorporated village 2 miles east. Burley, Cassia County's capital is located 50 miles to the north. Approximately 6.25 miles of the California National Historic Trail is contained within the Reserve, which also protects wagon ruts and emigrant signatures. The Reserve receives approximately 75,000 visitors per year of which many come for the world class rock climbing and grand scenery.

Purpose and Need

Purpose of the Project

The purpose of this project is to partially or fully restore the currently degraded borrow pit located near the east entrance to City of Rocks National Reserve. In order for this project to be successful, the following three objectives must be accomplished.

1. Reclaim, rehabilitate, or completely restore* the degraded borrow pit area. At a minimum, this action must establish a geologically and hydrologically stable landscape and control the human disturbances that are causing resource degradation.
2. Provide for appropriate public use of the site.
3. Provide for protection of the California Trail as called for in the City of Rocks National Reserve Comprehensive Management Plan (CMP) (National Park Service 1994). The borrow pit is located within the California Trail subzone, identified in the CMP. The

* See Glossary

purpose of this management zone is to protect the foreground views from the trails and to allow visitors to experience a landscape reminiscent of the trail period.

Need for the Project

This project is needed to solve several problems created by the borrow pit. The primary needs include the following.

1. The project is needed to protect the California Trail. The borrow pit disrupts the foreground view from the trail, in conflict with the designated California Trail subzone, identified in the CMP. In addition, continuing disturbances associated with the borrow pit, such as vehicle traffic and parking, storm event runoff, and erosion, threaten to directly impact the adjoining documented trail remnant. The purpose of City of Rocks National Reserve is to preserve and protect the resources and significant values that contribute to its uniqueness. The California Trail and its scenery are major components of these resources and values.

2. The project is needed to solve the problem of past and continuing disturbance and erosion of the site's topography, hydrology, soils, and vegetation.

3. In addition, the project is needed to eliminate or reduce the severity of the site's visual impact from the main entrance into the Reserve. The visual scar left by the borrow pit detracts from the visitor's first impression of the values for which the Reserve was established as a unit of the National Park System.

This project will also take advantage of the opportunity to identify appropriate public uses of the site. In particular, the project will determine the appropriateness of day use of this site by equestrians and others to access the Reserve and its trails.

Background

Prior to the 1988 designation of City of Rocks National Reserve, the project site was used as a borrow pit by Cassia County. It is one of two county extraction sites, formerly on BLM land, now within the boundaries of the Reserve. In the past, unauthorized use of the site has included intermittent dumping. By the early 1990s, nearly all of the garbage had been removed, and some of the high walls of the borrow pit had been reduced. Over time, however, the natural hydrologic function of contiguous intermittent stream channels has been disrupted. Native vegetation has also been virtually eliminated from the site. There have been no attempts at revegetation, and native plants have not reestablished themselves naturally.

This borrow pit was established within what is now recognized as the California Trail corridor. This corridor was identified by historian, Merle Wells in the 1960s, during the NHL nomination process. The CMP designated the California Trail corridor as a subzone of the historic preservation management zone.

Historically, livestock trailing also occurred along this corridor. Trailing of livestock on the City of Rocks Road continues today.

During the summer of 1998, the borrow pit was re-activated, and additional material was extracted from the northwest portion of the pit for road maintenance within the Reserve. This activity ceased in 1999.

Since 1999, the site has also been used infrequently as an equestrian staging area and trailhead.

Alternatives

Alternative 1: No-Action

Under the No-Action Alternative, the site would continue to be used as an undeveloped equestrian staging area and trailhead. Park brochures would direct equestrian users to this undeveloped site, where approximately 10 vehicles with trailers can be accommodated. As a day-use site, vehicles would be permitted at this location between 7 a.m. and 10 p.m. To prevent vehicles from encroaching beyond the existing impacted area, rock or other natural-material barriers would be placed where needed. Existing trails would be maintained. Noxious weeds would be treated as necessary. Existing site impacts would not be rehabilitated.

Summary of Environmental Consequences

Resource Type	Impact	Boundary of Impact
Geology, Topography and Hydrology	Accelerated erosion and sedimentation would continue	Would likely dissipate within 200 yards of site
Soils	Continued rapid erosion of remaining soils on site and adjacent undisturbed areas	4-acre site and possibly adjacent areas
Air Quality	Continued generation of fugitive dust from vehicles and wind	Within about ¼ mile of site
Vegetation	Native vegetation would continue to be excluded from the site, and weeds would continue to invade	Limited to 4-acre site
Wildlife	Continued exclusion of wildlife habitat	Limited to 4-acre site
Species of Conservation Concern	Continued exclusion of habitat for 6 state-ranked rare species	Limited to 4-acre site
Cultural Resources	Unnatural landscape within California Trail corridor and continued threats to documented trail remnant	4-acre site plus about 200 feet of trail remnant
Scenic Resources	Visual scar degrades views from Reserve entrance and from Circle Creek overlook	Viewshed within approximately ½ mile
Recreation	Negligible recreational impacts from continued use of the staging area and trailhead.	City of Rocks National Reserve

Alternative 2: Site Restoration

Under Alternative 2, the site would be substantially restored, and natural processes would be returned to pre-disturbance conditions. Restoration activities would include:

- Importing approximately 9,000 cubic yards of rock and fill material from a nearby BLM mineral materials site, re-grading the borrow pit site to blend with the surrounding topography, and placing topsoil similar to that which previously existed on much of the site (Riceton loamy coarse sand). This re-contouring would reestablish the natural surface hydrology to reduce further erosion.
- The re-contoured site would be seeded, planted, and mulched to reestablish the native plant community. Where available, locally-grown native plant materials would be used for revegetation in order to maintain genetic integrity of local species. Steps would be taken to ensure that all materials used in revegetation, including topsoil and plant materials, are free of nonnative plant seeds or materials. If necessary, appropriate site treatments (physical, biological, or chemical) would be employed to prevent the establishment and spread of invasive weeds.
- Prior to beginning work within City of Rocks National Reserve, all contractor's materials and equipment, including earth moving and hauling equipment, would be thoroughly cleaned and inspected to prevent importation or dispersal of nonnative seeds or other plant materials into the Reserve.

Site restoration under this alternative, including restoring the natural contour and vegetation as well as the exclusion of vehicles from the site, would also serve to repair the view east from the Circle Creek overlook and other vantage points.

This alternative would protect the documented remnant of the California Trail. This would be in keeping with the intent of the CMP (page 83) which reads, "*Its* [California Trail subzone] *purpose would be to protect the foregrounds of the views from the trails and to allow visitors to experience a landscape reminiscent of the trail period.*"

The equestrian trailhead, staging area, and associated facilities described in Alternative 3 would be located at another site to be developed in the future, either inside or outside the Reserve. A trail alignment from the new staging area would be established to provide links to existing trails. This may also include restoration of the existing trail link to Circle Creek Basin (depending on the location of a new equestrian staging area).

This alternative can best be described as a site restoration project, meaning that the area would be returned to conditions and processes representing the ecological zone of the area prior to disturbance. Because it is the alternative that most fully restores the site, Alternative 2 is the environmentally preferred alternative.

Summary of Environmental Consequences

Resource Type	Impact	Boundary of Impact
Geology, Topography and Hydrology	Accelerated erosion and sedimentation would be greatly reduced in the long term	4-acre site and possibly adjacent areas
Soils	Long-term reduction of soil erosion; Minor short-term accelerated soil erosion immediately following restoration	4-acre site and possibly adjacent areas
Air Quality	Substantial long-term reduction of fugitive dust	Within about ¼ mile of site
Vegetation	Restored native plant community	Limited to 4-acre site
Wildlife	Restored wildlife habitat	4-acre site and possibly adjacent areas
Species of Conser-vation Concern	Restored habitat provides minor benefit for 6 state-ranked rare species	Limited to 4-acre site
Cultural Resources	Landscape within California Trail corridor restored and threats to documented trail remnant eliminated	4-acre site plus about 200 feet of trail remnant
Scenic Resources	Views from Reserve entrance and from Circle Creek overlook restored	Viewshed within approximately ½ mile
Recreation	Staging area and trailhead parking relocated	City of Rocks National Reserve and possibly adjacent areas

Alternative 3: Facility Enhancement and Site Reclamation

This alternative would develop the site to provide for the needs of equestrians, hikers and snowmobile users. This development would involve construction of facilities such as a hitching post, trailer-parking area, trail-entry point with signs, and a vault toilet. Site rehabilitation would be limited in this alternative, because developments proposed for the remainder of the site would prevent restoration of the natural topography and hydrology. However, partial re-contouring of the 15-foot high walls would more closely blend the site with the surrounding topography. Although the natural surface hydrology would not be restored, erosion control measures, including revegetation on the periphery of the site, would be integrated into the design. Dust abatement would be implemented in the parking area.

This alternative can best be described as reclamation of the borrow pit through the enhancement of the trailhead and equestrian facilities.

Summary of Environmental Consequences

Resource Type	Impact	Boundary of Impact
Geology, Topography and Hydrology	Some re-contouring of topography; Natural surface hydrology not restored; Some reduction of erosion and sedimentation rates	4-acre site and possibly adjacent areas
Soils	Minor reduction of soil erosion rates	4-acre site and possibly adjacent areas
Air Quality	Long-term reduction of fugitive dust	Within about ¼ mile of site

Vegetation	Exclusion of native vegetation from site	Limited to 4-acre site
Wildlife	Continued exclusion of wildlife habitat	Limited to 4-acre site
Species of Conservation Concern	Continued exclusion of habitat for 6 state-ranked rare species	Limited to 4-acre site
Cultural Resources	Unnatural landscape within California Trail corridor; Some reduction of threats to documented trail remnant	4-acre site plus about 200 feet of trail remnant
Scenic Resources	Facilities and vehicles degrade views from Reserve entrance and from Circle Creek overlook	Viewshed within approximately ½ mile
Recreation	Enhanced staging area and trailhead parking with new facilities attracts and accommodates increased use	City of Rocks National Reserve

Alternative 4: Site Rehabilitation – Preferred Alternative

The site would be rehabilitated and most natural processes would be returned to pre-disturbance conditions. Rehabilitation activities would include:

- Importing approximately 9,000 cubic yards of rock and fill material from a nearby BLM mineral materials site, re-grading the borrow pit site to blend with the surrounding topography, and placing topsoil similar to that which previously existed on much of the site (Riceton loamy coarse sand). This re-contouring would reestablish the natural surface hydrology to reduce further erosion.
- The re-contoured site would be seeded, planted, and mulched to reestablish the native plant community. Where available, locally-grown native plant materials would be used for revegetation in order to maintain genetic integrity of local species. Steps would be taken to ensure that all materials used in revegetation, including topsoil and plant materials, are free of nonnative plant seeds or materials. If necessary, appropriate site treatments (physical, biological, or chemical) would be employed to prevent the establishment and spread of invasive weeds.
- Prior to beginning work within City of Rocks National Reserve, all contractor's materials and equipment, including earth moving and hauling equipment, would be thoroughly cleaned and inspected to prevent importation or dispersal of nonnative seeds or other plant materials into the Reserve.

Site rehabilitation, including returning topography and vegetation to near pre-disturbance conditions, would also substantially repair the view east from the Circle Creek overlook and other vantage points. Motor vehicles would be eliminated from the borrow pit area and restricted to the new wayside adjacent to the City of Rocks Road. This wayside would include the Reserve entrance identification sign.

This alternative would protect the documented remnant of the California Trail. Development would be kept to a minimum at this site and would still be in keeping with the intent of the California Trail management sub-zone, as called for in the CMP (page 83).

The equestrian trailhead and staging area and the minimum amenities described in Alternative 3 would be located at another site that would be developed either inside or outside the Reserve. A trail alignment from the new staging area would be established to provide links to existing trails. This may also include restoration of the existing trail link to Circle Creek Basin (depending on the location of a new equestrian staging area).

This alternative can best be described as a site rehabilitation project. Rehabilitation does not necessarily restore site characteristics to pre-disturbance conditions, but it does involve establishing geologically and hydrologically stable landscapes that support the natural ecosystem mosaic.

Summary of Environmental Consequences

Resource Type	Impact	Boundary of Impact
Geology, Topography and Hydrology	Accelerated erosion and sedimentation would be greatly reduced in the long term; Slight increase in sediment loading in the road drainage system	4-acre site and possibly adjacent areas
Soils	Long-term reduction of soil erosion; Minor short-term accelerated soil erosion immediately following restoration	4-acre site and possibly adjacent areas
Air Quality	Substantial long-term reduction of fugitive dust	Within about ¼ mile of site
Vegetation	Restored native plant community	Limited to 4-acre site
Wildlife	Restored wildlife habitat	4-acre site and possibly adjacent areas
Species of Conser-vation Concern	Restored habitat provides minor benefit for 6 state-ranked rare species	Limited to 4-acre site
Cultural Resources	Threats to documented trail remnant eliminated; Landscape within California Trail corridor restored except for vehicles using wayside	4-acre site plus about 200 feet of trail remnant
Scenic Resources	Views from Reserve entrance and from Circle Creek overlook restored except for vehicles using wayside; Visitors using wayside better appreciate scenic values	Viewshed within approximately ½ mile
Recreation	Staging area and trailhead parking relocated	City of Rocks National Reserve and possibly adjacent areas

Affected Environment

This chapter addresses those elements of the environment that would be affected by any of the alternatives. The following topics are not discussed in this section either because they are not present on the site or because they are not affected by the alternatives: hazardous materials, floodplains, wetlands, socioeconomics, and paleontological resources.

Geology, Topography, and Hydrology

The nearest rock outcrops to the site are Elba Quartzite beds ¼-mile to the south and the Precambrian granite monoliths of the Green Creek Complex 1/3-mile to the north. Material removed from the borrow pit consisted of granitic sand and gravel, and at no time did extraction expose bedrock or compromise geologic outcrops. The removal of these materials has created an unnatural topography, including 15-foot high walls. In addition, the borrow pit interferes with the natural hydrology of the area by redirecting all surface drainage toward an arroyo. Intermittent concentrated surface flows have resulted in rapid runoff, accelerated erosion of the arroyo and adjoining areas, and increased sediment loading down gradient.

Soils

Topsoil was removed from much of the site over 40 years ago. The periphery of the site is still composed of undisturbed soils. In the western three-quarters of the site, this soil is (or was) Riceton loamy coarse sand on slopes of 4 to 12 percent. This is a very deep, well-drained soil with moderately rapid permeability. Runoff is slow or medium, and the hazard of water and wind erosion is moderate. Available water capacity is 4 to 5 inches. The potential natural plant community is mountain big sagebrush, bluebunch wheatgrass. Range seeding is limited by available water and the hazard of water and wind erosion.

The eastern one-quarter is (or was) composed of Poisonhol very stony loam, 8 to 15 percent slopes. This is a moderately deep, well-drained soil with moderate permeability. There is a hardpan at a depth 20 to 40 inches. Runoff is medium to rapid, and there is a moderate to severe hazard of water erosion. The available water capacity of this soil is low. Potential natural plant community is mountain big sagebrush, bluebunch wheatgrass. Range seeding is limited by available water and the hazard of water erosion.

Air Quality

The Reserve is located within a class II air quality area, as designated under provisions of the Clean Air Act. Class II areas are those that need reasonably or moderately good air quality protection. This is presently the class designation of most areas in the United States. Due to the low population density and lack of large emission sources near the Reserve, air quality is generally very good. However, air quality data for the Reserve has not been systematically collected. High particulate matter concentrations occur in the Reserve when strong winds increase dust emissions from exposed soils in agricultural fields or on dirt roads. Air quality within the Reserve is important primarily for visibility and visitor enjoyment of scenic vistas. Air quality may also be important for preservation of natural systems and cultural resources.

The primary source of air degradation in the vicinity of the borrow pit is fugitive dust generated by automobile traffic on the adjoining unpaved City of Rocks Road. However this problem has been minimized by the recent application of dust guard to this road and to Twin Sisters Road by Cassia County. Other roads within the Reserve have not received this application. The amount of fugitive dust generated at the borrow pit is low due to its small size, minimal traffic, and the low speeds at which vehicles enter and exit the site.

Vegetation

Predominant native vegetation around the site, and consequently, previously existing on the impacted site, includes basin big sagebrush (*Artemisia tridentata* Nutt. subsp. *tridentata*), rabbit brush (*Ericameria nauseosa* (Pallas ex Pursh) Nesom & Baird (=*Chrysothamnous nauseosus*)), bitterbrush (*Purshia tridentata*), Utah juniper (*Juniperus osteosperma*), pinyon pine (*Pinus monophylla*), and prickly pear cactus (*Opuntia polyacantha*). This site sits at the northern reach of the largest pinyon pine forest in Idaho. Interspersed between the dominant species are various grasses and herbaceous species. No vegetation of special concern or status is present. Several non-native plant species occur within the site and may encroach into the native community surrounding the borrow pit.

Wildlife

Although wildlife generally avoid the impacted area due to the lack of cover and habitat, the arroyo on the north side of the site is a natural wildlife corridor that is briefly interrupted by the borrow pit. Typical wildlife using the corridor include mule deer, jack rabbit, mountain cottontail, coyote, bobcat, and small rodents. The borrow pit has been locally referred to as "the snake pit," in reference to a seemingly abundant number of rattlesnake or gopher snake encounters. The site does not seem to merit the name: in recent years snake sightings are no more common here than elsewhere in the Reserve.

Species of Conservation Concern

Sightings of the *threatened* bald eagle (*Haliaeetus leucocephalus*) (LT) occur infrequently within the City of Rocks National Reserve. These birds tend to prefer the valley floor east of the Reserve to the mountain slopes and rocky outcrops present near the borrow pit. It is the only species listed under the Endangered Species Act that is known to occur within the Reserve. Other species of conservation concern in the Reserve with a state rank of either S1 (critically imperiled), S2 (imperiled), or S3 (rare) include pinyon jay (*Gymnorhinus cyanocephalus*) (S2), Virginia's warbler (*Vermivora virginiae*) (S2), black-throated gray warbler (*Dendroica nigrescens*) (S3), cliff chipmunk (*Tamias dorsalis*) (S1), and pygmy rabbit (*Brachylagus idahoensis*) (S3). These three species of birds and the cliff chipmunk prefer habitats that include pinyon juniper woodlands. The preferred habitat of the pygmy rabbit is a dense stand of sagebrush. Sage grouse (*Centrocercus urophasianus*) (S4), a species of special concern due to recent declines in population and its importance as a game species, is also found within the Reserve, preferring large unbroken blocks of sagebrush habitat. None of these species have been observed directly within the four-acre disturbance of the borrow pit, but have been observed in the general area.

Cultural Resources

The most notable cultural resource in the immediate vicinity of the borrow pit is the documented remnant of the California Trail. Although adjacent, the trail remnant is outside the footprint of the borrow pit. Other man-made features of the borrow pit site include remnants of items dumped at the site as early as the origin of the borrow pit, the county road, fences consisting of cedar posts and barbed wire, and the borrow pit itself. The county road and fences would

continue to exist regardless of the alternative selected. The borrow pit and remnant dump are inconsequential cultural resources and are in conflict with the primary mission of the Reserve.

The borrow pit was established within what is now recognized as the California Trail corridor. This corridor was identified by historian, Merle Wells in the 1960s, during the City of Rocks National Historic Landmark nomination. The City of Rocks National Historic Landmark, encompassing approximately 12,480 acres mostly within the Reserve, includes the valley and basins formed by spectacular granite monoliths through which the California Trail and the Salt Lake Alternate passed. The extent of the significant fabric of the California Trail includes not only the trail remnants and landmarks but also the expansive landscape the emigrants observed as they crossed through the City of Rocks on their westward trek. Thus, the viewshed, or the extent of the views seen from the emigrant trail, is a significant feature of the National Historic Landmark. In 1994, the Reserve's Comprehensive Management Plan designated the California Trail corridor as a subzone of the historic preservation management zone.

An archeological and historic sites survey was completed by the National Park Service (NPS) in September 1995. The purpose of the survey was to identify and record any cultural resources that could be impacted by reclamation of the borrow pit, proposed at the time. The survey found no significant cultural material, although a recent can dump was noted. The report recommended a finding of no effect. In November 1995, the NPS completed An Assessment of Actions Having an Effect on Cultural Resources, which stated, "*The area is considered to be of little cultural significance due to the absence of water. The gravel pit has been in existence for a significant number of years and the reclamation of the area would add to the integrity of the historic landscape. At present it is a dust bowl, erosion problem and eye sore*."

Scenic Resources

This site is positioned directly within two predominant scenic viewsheds: the view east from Circle Creek Overlook into Almo and the Raft River Valley, and the view west from the park entrance to the first granite monoliths. The scenic resources are specifically acknowledged within the Reserve's enabling legislation, which states: "*There is hereby established the City of Rocks National Reserve in order to...protect and maintain scenic quality*." The visual scar left by the borrow pit degrades the visitor's first impression of the values for which the Reserve was established as a unit of the National Park System.

Recreation

Since the closure of the site as a borrow pit in 1999, virtually all use of the area has been for recreational purposes. The primary recreational use of the borrow pit site is as an equestrian staging and trailhead parking area. The trailhead provides access, via a single trail, to the Circle Creek Overlook Road about a half-mile to the west. Following the road to the overlook, recreationists can then use the Lower North Fork Circle Creek Trail, providing access to approximately 7,000 acres of the Reserve.

Two times a year, the Reserve conducts ranger-led horseback rides for the public. These rides, limited to 25 horseback riders, are staged from the borrow pit. It is estimated that these organized trail rides constitute the majority of recreational visits by equestrians to the site. Other infrequent equestrian use of the site by the public occurs mainly during the summer and fall.

Occasionally the borrow pit is used by the public as a staging area for other recreational activities. Typically this use occurs in the winter when roads accessing other parts of the Reserve are closed or impassible. These recreational activities include snowmobiling, snowshoeing, cross-country skiing, and winter climbing. It is estimated that there are fewer than 20 such recreational visits to the site per year.

Environmental Consequences

This section describes the environmental consequences, or potential impacts, on the natural, cultural, and human environment at City of Rocks National Reserve from implementation of the alternatives considered in this Environmental Assessment. The topics discussed are the same as those described in the Affected Environment section.

Methodology

For each topic, impacts are defined in terms of context (extent of area affected), duration (how long an impact would last), and intensity (the degree to which a resource or value would be affected). Direct, indirect, and cumulative effects are also discussed in each impact topic. For all impact topics, the following definitions were applied:

Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.

Direct: An effect that is caused by an action and that occurs in the same time and place as that action.

Indirect: A reasonably foreseeable effect that is caused by an action but that occurs later in time or farther removed in distance from that action.

Short-term: An effect that within a short period of time (generally one or two years but no more than five years) would no longer be detectable as the resource returns to its pre-disturbance condition or appearance.

Long-term: A change in a resource or its condition that does not return to pre-disturbance condition or appearance and for all practical purposes is considered permanent.

Cumulative Effects Analysis

The Council on Environmental Quality (CEQ 1978) regulations for implementing NEPA require assessment of cumulative effects in the decision-making process for federal projects. Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7).

To identify and analyze cumulative effects, it is necessary to identify other past, ongoing, or reasonably foreseeable future actions at City of Rocks National Reserve and the surrounding area. Other actions or projects that make up the cumulative impact scenario for this EA include the following:

- The Idaho Department of Parks and Recreation is planning to develop the Smoky Mountain Campground on leased BLM land just east of the main entrance to City of Rocks National Reserve. The campground, still in the planning stages, would include up to approximately 75 camping sites. Some of these sites would be developed and designated specifically for equestrians. Other sites would be designed for recreational vehicle (RV) use and include water, electricity, showers, and a dump station. Plans for the campground may also include an equestrian trail, trailhead, and staging area.
- An equestrian trailhead and staging area to provide access to trails within City of Rocks National Reserve will be provided. This trailhead could be located in one of several places: Improvements could be made to the current trailhead at the borrow pit site (as described in Alternative 3 of this EA), the trailhead could be developed at the proposed Smoky Mountain Campground (described above), or a new trailhead could be developed at another location, either inside or outside the Reserve.
- Continuing development of nearby Castle Rocks State Park by the Idaho Department of Parks and Recreation. Plans for the day-use-only park are being developed for additional rock climbing areas and routes and trails for non-motorized use.
- Road improvements to the City of Rocks Back Country Byway from Conner Creek to Almo are proposed to occur over the next several years. The primary improvements would include resurfacing of the road and installation of new signs.
- Relocation of the Circle Creek Overlook parking lot is proposed to take place sometime within the next several years. This project is designed to relocate the parking lot at the Circle Creek overlook and trailhead to reduce its visual impacts.
- A Fire Management Plan for City of Rocks National Reserve will be developed in 2004. This plan will address management of fire and vegetation within City of Rocks, including areas to be designated for suppression, prescribed fire, and other management scenarios.
- A project is in the development stages to study the historic vegetation ecology of the California Trail within City of Rocks National Reserve. The multi-year study, proposed to begin in 2004, would make management recommendations for the conservation of the ecological complex of plant communities historically occupying this segment of the California Trail.

Based on this list of other projects and actions, cumulative impacts to scenic resources and recreation have been identified. These cumulative impacts are discussed under the appropriate topic headings, later in this section.

Impairment Analysis

NPS policy (NPS 2001: *Management Policies*, Section 1.4) requires that potential effects be analyzed to determine whether or not proposed actions would impair the resources or values of the park.

The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve resources and values. NPS managers must always seek ways to avoid or minimize, to the greatest degree practicable, adverse impacts on the resources and values. However, the laws do give the NPS the management discretion to allow impacts on the resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS this management discretion, that discretion is limited by the statutory requirement that the NPS must leave the resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible manager, would harm the integrity of the resources and values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact on any resource or value may constitute impairment. An impact would be most likely to constitute an impairment if it affected a resource or value whose conservation would be (a) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, (b) key to the natural or cultural integrity of the park or to opportunities to enjoy it, or (c) identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment might result from NPS activities in managing a park, visitor activities, or activities undertaken by contractors and others operating in the park. In this document, a determination on impairment is made at the conclusion of each natural and cultural resource impact topic in this section.

Geology, Topography, and Hydrology

Methodology

The intensity of effects to geology, topography, and hydrology, discussed in the analysis below, is based on the following thresholds:

Negligible: Sedimentation in the arroyo adjacent to the borrow pit would occur at rates within the natural variability for the site. Disruptions to the natural topography and surface drainage would not be detectable.

Minor: Sedimentation in the arroyo adjacent to the borrow pit would occur at accelerated rates, rarely exceeding natural variability for short periods of time. Disruptions to the natural topography and surface drainage would be detectable but slight.

Moderate: Sedimentation in the arroyo adjacent to the borrow pit would occur at accelerated rates, exceeding natural variability for short periods of time. Disruptions to the natural topography and surface drainage would be readily apparent.

Major: Sedimentation in the arroyo adjacent to the borrow pit would occur at accelerated rates, greatly exceeding natural variability for long periods of time. Disruptions to the natural topography and surface drainage would be substantial and widespread.

Impacts from Alternative 1: No-Action

Under the No-Action Alternative, unnatural topography, including the 15-foot high walls would remain. Precipitation on these barren areas would result in rapid runoff, thus remaining unavailable for the establishment of vegetation. Heavy precipitation and associated runoff would continue to create unnatural sediment loading in the arroyo. This would continue to bury the natural vegetation. Without this vegetation, erosion of the arroyo would further accelerate. Unnatural, accelerated erosion and sedimentation occurring on the site would continue under the No-Action Alternative, resulting in long-term, moderate, adverse impacts to site topography and hydrology.

Impacts from Alternative 2: Site Restoration

Reestablishment of the natural site topography and vegetation, under Alternative 2, would decrease runoff rates, thereby increasing infiltration and the availability of precipitation to the site. Over time, site restoration would greatly reduce the unnatural, accelerated erosion and sedimentation occurring on the site. Sediment loading in the arroyo would return to natural levels. Alternative 2 would result in long-term, moderate, beneficial impacts to site topography and hydrology.

Impacts from Alternative 3: Facility Enhancement and Site Reclamation

Re-contouring of the 15-foot high walls, under Alternative 3, would more closely blend the site with the surrounding topography. Erosion control measures, including revegetation on the periphery of the site, would help reduce rapid runoff. However, most precipitation on the barren site would remain unavailable for the establishment of vegetation. Although the natural surface hydrology would not be restored under Alternative 3, the accelerated erosion and sedimentation occurring on the site would be reduced. Some unnatural sediment loading in the arroyo would continue to occur following heavy precipitation and associated runoff. Overall, Alternative 3 would result in long-term, minor, adverse impacts to site topography and hydrology.

Impacts from Alternative 4: Site Rehabilitation – Preferred Alternative

Site rehabilitation under Alternative 4 would, over time, greatly reduce the unnatural, accelerated erosion and sedimentation occurring on the site. Sediment loading in the arroyo would return to natural levels. Reestablishment of the natural site topography and vegetation would decrease runoff rates, thereby increasing infiltration and the availability of precipitation to the site. The wayside associated with this alternative would create a slight increase of sediment loading in the existing drainage system of City of Rocks Road. Thus, Alternative 4 would result in long-term, moderate, beneficial impacts to site topography and hydrology.

Impairment

The Reserve's geologic, topographic, and hydrologic resources would not be impaired by actions proposed under any of the alternatives.

Soils

Methodology

The intensity of effects to soils is discussed in the analysis below using the following definitions:

Negligible: Effects to soil stability, productivity, or infiltration capacity would be at or below the levels of detection.

Minor: Effects to soil stability, productivity, or infiltration capacity would be detectable but would only occur in a limited portion of the borrow pit and adjacent arroyo.

Moderate: Effects to soil stability, productivity, or infiltration capacity would be readily apparent, resulting in changes to much of the borrow pit, the arroyo, and some adjacent areas.

Major: Effects to soil stability, productivity, or infiltration capacity would have substantial and possibly permanent consequences over an area several times greater than the borrow pit.

Impacts from Alternative 1: No-Action

Under Alternative 1, the small amount of natural soil that remains on the site would be subject to continued rapid erosion from wind, summer thundershowers, and snowmelt. Adjacent areas of undisturbed soil would also be subject to accelerated erosion resulting from rapid runoff from the borrow pit. Under the No-Action Alternative, long-term, moderate, adverse impacts to soils would continue.

Impacts from Alternative 2: Site Restoration

Under Alternative 2, the site would be restored to conditions and processes representative of the area prior to creation of the borrow pit. This would include restoration of the natural topography, placement of suitable topsoil, and revegetation of the site. Once reestablished, vegetation would help hold soil in place, thereby reducing erosion to rates typical for the area. Prior to the establishment of suitable vegetation, however, unprotected soils, including those placed on the site, would be subject to accelerated erosion. These minor adverse impacts to soils would be short-term. Overall, Alternative 2 would greatly reduce the unnatural, accelerated soil erosion currently occurring on the site. This would result in long-term, moderate, beneficial impacts to soils.

Impacts from Alternative 3: Facility Enhancement and Site Reclamation

Erosion control measures under this alternative, including revegetation on the periphery of the site, would reduce the current unnatural, accelerated soil erosion. However, much of the site

would remain un-vegetated, exposing soils to rapid erosion from wind, summer thundershowers, and snowmelt. This would result in long-term, minor, adverse impacts to soils.

Impacts from Alternative 4: Site Rehabilitation – Preferred Alternative

Site rehabilitation under Alternative 4 would include reestablishment of the natural topography, placement of suitable topsoil, and revegetation of most of the site. The small area that would be occupied by the wayside would not be rehabilitated but would include appropriate surfacing and control measures (for example, water bars) to hold soil erosion rates to negligible levels. Once reestablished on the remainder of the site, vegetation would help hold soil in place, thereby reducing erosion to rates typical for the area. Prior to the establishment of suitable vegetation, however, unprotected soils, including those placed on the site, would be subject to accelerated erosion. These minor adverse impacts to soils would be short-term. Overall, Alternative 4 would greatly reduce the unnatural, accelerated soil erosion currently occurring on the site. This would result in long-term, moderate, beneficial impacts to soils.

Impairment

The Reserve's soils would not be impaired by actions proposed under any of the alternatives.

Air Quality

Methodology

Impacts to air quality are discussed below. The impact intensity thresholds are defined as follows:

Negligible: Changes in air quality due to the generation of fugitive dust would be slight, with no perceptible consequences to visibility.

Minor: Changes in air quality due to the generation of fugitive dust would be measurable, with limited effects to visibility.

Moderate: Changes in air quality due to the generation of fugitive dust would be readily apparent, although impacts to visibility would be relatively local and short-term.

Major: Changes in air quality due to the generation of fugitive dust would be obvious, and the effects on visibility would be noticed regionally.

Impacts from Alternative 1: No-Action

Fugitive dust would continue to be generated in the borrow pit by wind and vehicle traffic. Relative to unpaved roads and exposed agricultural soils in the region, the borrow pit is a minor source of this air pollutant. Thus, continuing, long-term, adverse impacts to air quality under the No-Action Alternative are expected to be minor.

Impacts from Alternative 2: Site Restoration

Under Alternative 2, vehicles would be excluded from the site, thereby eliminating one source of fugitive dust. Restoration of vegetation would help stabilize the site and reduce the amount of

soil exposed to wind erosion. The generation of fugitive dust from the site would, thus, be substantially reduced. This would result in a minor, long-term, beneficial impact to air quality. Following the placement of topsoil but prior to the establishment of vegetation planted for site restoration, however, some soil would be exposed to wind erosion, and some fugitive dust would be generated from the site. The resulting short-term adverse impacts to air quality would be negligible.

Impacts from Alternative 3: Facility Enhancement and Site Reclamation

Development of trailhead and staging area facilities under this alternative would include erosion control measures, reducing the amount of soil exposed to wind erosion. Although vehicles would still access the site, dust abatement would be implemented in the parking area. Together, these measures would largely reduce the amount of fugitive dust generated on the site. This would result in a minor, long-term, beneficial impact to air quality.

Impacts from Alternative 4: Site Rehabilitation – Preferred Alternative

Restoration of vegetation and elimination of vehicles from all but a small portion of the site would greatly reduce the two main generators of fugitive dust on the site. This would result in a minor, long-term, beneficial impact to air quality. Following the placement of topsoil but prior to the establishment of vegetation planted for site rehabilitation, some soil would be exposed to wind erosion and some fugitive dust would be generated from the site. As with Alternative 2, resulting adverse impacts to air quality would be short-term and negligible.

Impairment

The Reserve's air resources would not be impaired by actions proposed under any of the alternatives.

Vegetation

Methodology

The intensity of effects to vegetation is discussed in the analysis below using the following definitions:

Negligible:	Imperceptible effects on vegetation.
Minor:	Changes in plant community structure or composition are only slightly perceptible and localized.
Moderate:	An apparent change in plant community structure or composition that would result in a change of the use or function of the community by associated species on a small scale.
Major:	A substantial change in plant community structure or composition that represents a change in the ecological function, vegetation type, or species use on a landscape scale.

Impacts from Alternative 1: No-Action

Under the No-Action Alternative, the borrow pit would continue to be used as an equestrian staging area and trailhead and would not be revegetated. Weeds would continue to invade and temporarily occupy the site. When necessary, noxious weeds would be treated with appropriate control measures. The continued exclusion of native vegetation from the site and the continued exposure of the site to invasion by weeds would constitute a long-term, minor, adverse impact to vegetation.

Impacts from Alternative 2: Site Restoration

Seeding and planting under Alternative 2 would reestablish a native plant community on the restored site. As necessary, appropriate site treatments to prevent the establishment and spread of invasive weeds would also be undertaken. Restored native flora would blend with the surrounding vegetation over time, creating a dynamic native plant community. This would constitute a long-term, moderate, beneficial impact to vegetation.

Impacts from Alternative 3: Facility Enhancement and Site Reclamation

Site rehabilitation, including revegetation, under this alternative would be limited to approximately ½ acre, primarily on the periphery of the site. The parking area and other developments proposed for the remainder of the site would preclude revegetation on the majority of the site. The continued exclusion of native vegetation from the site would constitute a long-term, minor, adverse impact to vegetation.

Impacts from Alternative 4: Site Rehabilitation – Preferred Alternative

Under Alternative 4, seeding and planting would reestablish a native plant community on all but the small portion of the site used for the wayside. As with Alternative 2, appropriate site treatments to prevent the establishment and spread of invasive weeds would also be undertaken, as necessary. Native plants established on the site would blend with the surrounding vegetation over time, creating a dynamic native plant community. This would constitute a long-term, moderate, beneficial impact to vegetation.

Impairment

The Reserve's vegetation would not be impaired by actions proposed under any of the alternatives.

Wildlife

Methodology

The intensity of effects to wildlife and species of conservation concern, discussed in the analysis in the following two sections, is based on these threshold definitions:

Negligible: Wildlife would not be affected or the effects would be at or below the level of detection, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the wildlife species' population.

Minor: Effects to wildlife would be detectable, although the effects would be localized, small, and of little consequence to the species' population.

Moderate: Effects to wildlife would be readily detectable and localized, with consequences at the population level.

Major: Effects to wildlife would be obvious and would have substantial consequences to the populations in the region.

Impacts from Alternative 1: No-Action

Under the No-Action Alternative, the borrow pit would continue to be used as an equestrian staging area and trailhead. The disturbed area would not be restored. The natural topography, surface hydrology, vegetation, and wildlife habitat would continue to be disrupted. Weeds would continue to invade and temporarily occupy the site. These long-term, minor, adverse impacts to wildlife would continue under the No-Action Alternative.

Impacts from Alternative 2: Site Restoration

Restoration of the borrow pit under Alternative 2 would reestablish the natural topography, surface hydrology, and native vegetation of the site. Over time, ecological processes would be returned to near pre-disturbance conditions. Wildlife that use the area, including those that move along the arroyo, would benefit from the improved food and cover on the site. These impacts to wildlife from Alternative 2 would be long-term, minor, and beneficial.

Impacts from Alternative 3: Facility Enhancement and Site Reclamation

Site rehabilitation under this alternative would be limited to approximately ½ acre, primarily on the periphery of the site. The parking area and other developments proposed for the remainder of the site would preclude restoration of the topography, surface hydrology, vegetation, and wildlife habitat on the majority of the site. The continued disruption of these site features and processes would constitute long-term, minor, adverse impacts to wildlife.

Impacts from Alternative 4: Site Rehabilitation – Preferred Alternative

Rehabilitation of the borrow pit under Alternative 4 would substantially reestablish natural topography, surface hydrology, and native vegetation over most of the site. Only the wayside that would be adjacent to the City of Rocks Road would not be rehabilitated. As with Alternative 2, ecological processes would be returned to near pre-disturbance conditions over time. Wildlife that use the area, including those that move along the arroyo, would benefit from the improved food and cover on the site. Impacts to wildlife would be long-term, minor, and beneficial.

Impairment

The Reserve's wildlife resources would not be impaired by actions proposed under any of the alternatives.

Species of Conservation Concern

Methodology

As discussed in the Affected Environment section, all of the species of conservation concern are wildlife species. Therefore, the intensity of effects to species of conservation concern, analyzed below, uses the same threshold definitions as the wildlife impact analysis in the preceding section.

Impacts from Alternative 1: No-Action

Under the No-Action Alternative, the borrow pit would continue to be used as an equestrian staging area and trailhead. The disturbed area would not be restored. The natural topography, surface hydrology, vegetation, and wildlife habitat would continue to be disrupted. Weeds would continue to invade and temporarily occupy the site. These long-term, minor, adverse impacts to species of conservation concern would continue under the No-Action Alternative.

Impacts from Alternative 2: Site Restoration

Restoration of the borrow pit under Alternative 2 would reestablish the natural topography, surface hydrology, and native vegetation of the site. Over time, ecological processes would be returned to near pre-disturbance conditions. Species of conservation concern that use the area would benefit from this restoration. Even if fully restored, however, the site would not support ideal habitat for any of these species. Therefore beneficial impacts to species of conservation concern from Alternative 2 would be long-term and minor.

Impacts from Alternative 3: Facility Enhancement and Site Reclamation

Site rehabilitation under this alternative would be limited to approximately ½ acre, primarily on the periphery of the site. The parking area and other developments proposed for the remainder of the site would preclude restoration of the topography, surface hydrology, vegetation, and wildlife habitat on the majority of the site. The continued disruption of these site features and processes would constitute long-term, minor, adverse impacts to species of conservation concern.

Impacts from Alternative 4: Site Rehabilitation – Preferred Alternative

Rehabilitation of the borrow pit under Alternative 4 would substantially reestablish natural topography, surface hydrology, and native vegetation over most of the site. Only the wayside that would be adjacent to the City of Rocks Road would not be rehabilitated. As with Alternative 2, species of conservation concern that use the area would benefit, however the site would not support ideal habitat for any of these species. Therefore, Alternative 4 would have long-term, minor, beneficial impacts on species of conservation concern.

Impairment

The Reserve's species of conservation concern would not be impaired by actions proposed under any of the alternatives.

Cultural Resources

Methodology

For the purposes of this analysis, levels of impact to cultural resources were defined as follows:

Negligible: The impact on California trail remnants, the viewshed from the trail corridor, or archeological resources would be barely perceptible.

Minor: The impact on California trail remnants, the viewshed from the trail corridor, or archeological resources would be perceptible and measurable, but it is slight and localized.

Moderate: The impact on California trail remnants, the viewshed from the trail corridor, or archeological resources would be perceptible and measurable. The impact changes one or more character-defining features of a resource, but it does not diminish the integrity of the resource to the extent that the National Historic Landmark is in jeopardy.

Major: The impact on California trail remnants, the viewshed from the trail corridor, or archeological resources would be substantial and permanent. The impact changes one or more character-defining features of a resource, diminishing the integrity of the resource to the extent that the National Historic Landmark is in jeopardy.

Impacts from Alternative 1: No-Action

Under the No-Action Alternative, the unnatural topography of the barren borrow pit would continue to exist within the California Trail corridor in the City of Rocks National Historic Landmark. This corridor, identified during the NHL nomination process, was also designated as a subzone of the historic preservation management zone in the City of Rocks Comprehensive Management Plan. The purpose of the subzone is "to protect the foregrounds of the views from the trails and to allow visitors to experience a landscape reminiscent of the trail period." Under this alternative, the borrow pit would continue to disrupt the foreground view from the trail corridor. In addition, disturbances associated with the borrow pit, including erosion and unauthorized off-road vehicle use, would continue the threat of direct impacts to the adjoining documented California Trail remnant. These adverse impacts of the No-Action Alternative to cultural resources would be moderate and long-term.

Impacts from Alternative 2: Site Restoration

Restoration of the borrow pit under Alternative 2 would restore the site's natural topography and vegetation. In addition, vehicles would be excluded from the site. Over time, these changes would substantially restore the foreground views from the California Trail corridor. Existing accelerated erosion associated with the borrow pit would be greatly reduced following restoration. The threat of direct impacts to the adjoining documented trail remnant would, therefore, be substantially eliminated. These benefits of Alternative 2 would result in long-term, moderate, beneficial impacts to cultural resources.

In compliance with Section 106 of the National Historic Preservation Act, the National Park Service would continue to consult with the Idaho State Historic Preservation Office to make certain that there would be no adverse effects to the National Historic Landmark, California Trail Corridor, or documented trail remnant.

Impacts from Alternative 3: Facility Enhancement and Site Reclamation

Alternative 3 would include partial re-contouring of the 15-foot high walls, more closely blending the site with the surrounding topography, and erosion control measures, including revegetation on the periphery of the site. However, the parking lot and equestrian staging area and facilities would dominate and disrupt the foreground view from the California Trail corridor. The threat of direct impacts to the adjoining documented trail remnant from erosion and unauthorized off-road vehicle use under Alternative 3 would be less than that of the No-Action Alternative. The resulting impacts to cultural resources would be long-term, moderate, and adverse.

In compliance with Section 106 of the National Historic Preservation Act, the National Park Service would continue to consult with the Idaho State Historic Preservation Office to identify steps to be taken to resolve any adverse effects to the National Historic Landmark, California Trail Corridor, or documented trail remnant.

Impacts from Alternative 4: Site Rehabilitation – Preferred Alternative

Rehabilitation of the borrow pit under Alternative 4 would substantially reestablish natural topography and native vegetation over most of the site. Only the wayside that would be adjacent to the City of Rocks Road would not be rehabilitated. Over time, these changes would help restore the foreground views from the California Trail corridor. Existing accelerated erosion associated with the borrow pit would be greatly reduced under this alternative. The threat of erosion and off-road vehicle damage to the adjoining documented trail remnant would, therefore, be substantially eliminated. These benefits of Alternative 4 would result in long-term, moderate, beneficial impacts to cultural resources.

Although excluded from most of the site, vehicles would be able to access the wayside and the Reserve entrance identification sign that would be constructed on the site. The wayside and the vehicles would constitute minor intrusions into the foreground views from the California Trail corridor. These intrusions would constitute long-term, minor, adverse impacts to this cultural resource.

In compliance with Section 106 of the National Historic Preservation Act, the National Park Service would continue to consult with the Idaho State Historic Preservation Office to make certain that there would be no adverse effects to the National Historic Landmark, California Trail Corridor, or documented trail remnant.

Impairment

The Reserve's cultural resources would not be impaired by actions proposed under any of the alternatives.

Scenic Resources

Methodology

The intensity of effects to scenic resources is discussed in the analysis below using the following definitions:

Negligible:	Imperceptible or undetectable effects on scenic resources.
Minor:	Impacts to scenic resources are barely detectable or limited to a relatively small area.
Moderate:	Impacts to scenic resources are readily apparent.
Major:	Impacts to scenic resources are highly noticeable and result in a change of character of the landscape.

Impacts from Alternative 1: No-Action

Under the No-Action Alternative, the visual scar of the borrow pit would continue to degrade the visitor's first impression of the values for which the Reserve was established. In addition, the view east from the Circle Creek overlook would continue to be substantially compromised by the barren site. These continuing impacts to the Reserve's scenic resources would be long-term, moderate, and adverse.

Impacts from Alternative 2: Site Restoration

Restoration of the borrow pit under Alternative 2 would restore the site's natural topography and vegetation. In addition, vehicles would be excluded from the site. Over time, these changes would substantially restore both the view west from the park entrance to the first granite monoliths and the view east from Circle Creek overlook. The proposed relocation of the Circle Creek Overlook parking lot would also beneficially affect scenic resources in this area of the Reserve, and these impacts would be cumulative with those of Alternative 2. Thus, Alternative 2 would result in long-term, moderate, beneficial impacts to two predominant scenic viewsheds within the Reserve.

Impacts from Alternative 3: Facility Enhancement and Site Reclamation

Although Alternative 3 would include partial re-contouring of the 15-foot high walls and revegetation on the periphery of the site, the parking lot and equestrian staging area and facilities proposed under this alternative would dominate views of this area. These facilities and vehicles using the site would degrade the visitor's first impression of the values for which the Reserve was established. Also, the view east from the Circle Creek overlook would be substantially compromised by the site. Thus Alternative 3 would result in long-term, moderate, adverse impacts to the Reserve's scenic resources.

Impacts from Alternative 4: Site Rehabilitation – Preferred Alternative

Rehabilitation of the borrow pit under Alternative 4 would substantially reestablish natural topography and native vegetation over most of the site. Only the wayside that would be adjacent

to the City of Rocks Road would not be rehabilitated. Over time, these changes would help restore both the view west from the park entrance to the first granite monoliths and the view east from Circle Creek overlook. Although excluded from most of the site, vehicles would be able to access the wayside and the Reserve entrance identification sign that would be constructed on the site. The wayside and the vehicles would constitute minor visual intrusions. However, the wayside would be used by some visitors to better appreciate the scenic values for which the Reserve was established. The proposed relocation of the Circle Creek Overlook parking lot would also beneficially affect scenic resources in this area of the Reserve, and these impacts would be cumulative with those of Alternative 4. Overall, Alternative 4 would result in minor, long-term, beneficial impacts to scenic resources within the Reserve.

Impairment

The Reserve's scenic resources would not be impaired by actions proposed under any of the alternatives.

Recreation

Methodology

For the purposes of this analysis, levels of impact to recreation were defined as follows:

Negligible: The impacts to recreation would be imperceptible to most visitors to City of Rocks National Reserve.

Minor: The impacts to recreation at City of Rocks National Reserve would be highly localized or affect only a small portion of visitors on an annual basis.

Moderate: The impacts to recreation would affect many visitors to City of Rocks, but the impacts would only affect recreation in one area of the Reserve, leaving other recreational opportunities largely unaffected.

Major: The impacts to recreation would affect most visitors to City of Rocks, resulting in substantial limits on recreational activities throughout much of the Reserve.

Impacts from Alternative 1: No-Action

Under the No-Action Alternative, the borrow pit would continue to be available for day use as a staging area and trailhead. Park brochures and staff would direct equestrian users to this site, where approximately 10 vehicles with trailers can be accommodated. Occasional staging of winter recreation activities would also continue at the site. Based on estimates of the amount of use that takes place at the borrow pit, impacts to recreation under this alternative would be negligible.

Impacts from Alternative 2: Site Restoration

Restoration under Alternative 2 would eliminate vehicles from the borrow pit. The equestrian staging and trailhead parking area would be relocated at another site, to be developed in the future, either inside or outside the Reserve. Prior to the creation of the new staging area, however, equestrians would need to use one of the other parking areas within the Reserve.

Organized trail rides would be staged out of the Bread Loaves parking area, and equestrians inquiring at the visitor center or consulting park brochures would also be directed to this site. The Circle Creek Overlook parking area would probably also receive some of the displaced use. All equestrian use displaced by restoration of the borrow pit would be relocated to the new staging and trailhead parking area when it is completed. Staging of other, principally winter, recreation activities would also be displaced from the borrow pit under this alternative. These recreationists would have to find and use other locations along the City of Rocks Road suitable to their recreational pursuits and the road conditions at the time of their visit.

Proposed road improvement to the City of Rocks Back Country Byway, development of additional camping facilities at the planned Smoky Mountain Campground, and continuing development of recreational opportunities at nearby Castle Rocks State Park could result in increased recreational visitation to City of Rocks National Reserve. Impacts from this increased visitation would be cumulative with the displacement of recreation that would occur under Alternative 2. Such impacts, however, are expected to be minor, as only a small portion of visitors to the Reserve use the borrow pit site.

Alternative 2 would thus result in short-term, minor adverse impacts to recreation. Long-term adverse impacts to recreation (following creation of a new staging and trailhead parking area) would be negligible.

Impacts from Alternative 3: Facility Enhancement and Site Reclamation

Facility enhancement at the borrow pit under Alternative 3 would include construction of a hitching post, trailer-parking area, trail-entry point with signs, and a vault toilet. These developments would provide for the needs of equestrians and other recreational users of the site. It is also anticipated that the enhanced facilities would attract and accommodate some increased recreational use in this part of the Reserve. Alternative 3 would thus result in long-term, minor, beneficial impacts to recreation.

Impacts from Alternative 4: Site Rehabilitation – Preferred Alternative

Rehabilitation of the borrow pit under Alternative 4 would eliminate vehicles from all but the wayside that would be constructed on the site. Equestrian staging and trailhead parking would be relocated at another site, to be developed in the future, either inside or outside the Reserve. Prior to the creation of the new staging area, however, equestrians would need to use one of the other parking areas within the Reserve. As with Alternative 2, organized trail rides and most other equestrian use would be staged out of the Bread Loaves parking area. The Circle Creek Overlook parking area would probably also receive some of the displaced use. All equestrian use displaced by rehabilitation of the borrow pit would be relocated to the new staging and trailhead parking area when it is completed. Staging of other, principally winter, recreation activities would also be displaced from the borrow pit under this alternative. These recreationists would have to find and use other locations along the City of Rocks Road suitable to their recreational pursuits and the road conditions at the time of their visit.

Cumulative impacts to recreation are expected to be the same as those described for Alternative 2.

Alternative 4 would thus result in short-term, minor adverse impacts to recreation. Long-term adverse impacts to recreation (following creation of a new staging and trailhead parking area) would be negligible.

Impairment

The Reserve's recreation resources would not be impaired by actions proposed under any of the alternatives.

GLOSSARY

Restoration – The process of bringing an ecological system, whether defined as an ecosystem, an ecological community, a landscape, or any combination of these, back into some prior condition. In practice, restoration means that the area is deliberately returned to conditions and processes representing the ecological zone in which the disturbance lies.

Rehabilitation – The process of making an ecological system work again by allowing processes to function naturally, usually by restoring some attributes. Rehabilitation does not necessarily restore exactly the condition of the pre-disturbance characteristics but does involve establishing geologically and hydrologically stable landscapes that support the natural ecosystem mosaic.

Reclamation – The process of making a degraded site more useful, more attractive, or in some way more desirable. Reclamation does not always imply returning a site to natural conditions and is often the creation of some "desired use." For example, a golf course or parking lot in a sand and gravel pit. Typically, this entails some ecological upgrading of certain processes or functions, such as hydrological function, but stops well short of restoration.